TEST REPORT

Reference No.	:	WTX24X12296736W001
Manufacturer	:	Lumi United Technology Co., Ltd.
Address	:	Room 801-804, Building 1, Chongwen Park, Nanshan iPark, No. 3370, Liuxian Avenue, Fuguang Community, Taoyuan Residential District, Nanshan District, Shenzhen, China
Product Name	:	Chime Repeater
Model No.	:	CH-C11E
Standards	:	**ETSI EN 301 893 V2.1.1 (2017-05)**
Date of Receipt sample	:	2024-12-16
Date of Test	:	2024-12-16 to 2025-02-19
Date of Issue	:	2025-02-19
Test Report Form No.	:	WTX_ETSI EN 301 893_2017W
Test Result	:	**Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

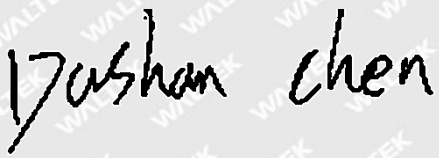
Prepared By:

Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

Tel.: +86-755-33663308 Fax.: +86-755-33663309 Email: sem@waltek.com.cn

Tested by:



Dashan Chen/ Project Engineer

Approved by:

Jason Su/ Manager

TABLE OF CONTENTS

Report version

Version No.	Date of issue	Description
Rev.00	2025-02-19	Original
/	/	/

1.GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Chime Repeater
Trade Name:	Aqara
Model No.:	CH-C11E
Adding Model(s):	CH-C11D
Rated Voltage:	DC5V
Battery Capacity:	/
Adapter Model:	/
Software Version:	/
Hardware Version:	/
Support Standards:	802.11a, 802.11n-HT20/40, 802.11ac(HT20/40/80)
RF Output Power	Max. 17.61dBm (EIRP)
Frequency Range:	Band 1: 5180-5240MHz
Modulation:	BPSK, QPSK,16QAM, 64QAM
Antenna Type:	FPC Antenna
Antenna Gain:	0.5dBi
The product is a slave without radar detection and doesn't have the Transmit Power Control function	
Note: The Antenna Gain is provided by the customer and can affect the validity of results. *The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model CH-C11E, but the circuit and the electronic construction do not change, declared by the manufacturer.*	

1.2 Test Standards

The tests were performed according to following standards:

ETSI EN 301 893 V2.1.1 (2017-05): 5GHz RLAN; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

1.3Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 893 VV2.1.1, Broadband Radio Access Networks (BRAN); 5GHz high performance RLAN; Harmonized EN covering the essential requirements of article 3.2 of the RED.
For radiation emission tests above 1GHz, it is referred to section EN 301 893 Annex A, B, C using the substitution measurement.

1.4 Test Facility

Address of the test laboratory
Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.
Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990
Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A
The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Exercise Software

The EUT exercise program used during the testing was designed to exercise the system components. The test software provided by the manufacture is started while the EUT is On and make the continue transmitting during the test.

Test Mode List		
Test Mode	Description	Remark
TM1	802.11a/802.11n-HT20/802.11ac-VHT20	Band 1: 5180MHz
TM2	802.11n-HT40/802.11ac-VHT40	Band 1: 5190MHz
TM3	802.11ac-VHT80	Band 1: 5210MHz
TM4	Receiving	/
Note: 802.11ac only with VHT80		

	NTNV	LTNV	HTNV
Temperature (°C)	20	-10	40
Voltage (V)	5		
Relative Humidity:	45%.		
ATM Pressure:	1019 mbar		

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB Cable	1.0	Shielded	Without Ferrite

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Doorbell Camera Hub	Lumi	CH-C09E	/
Adapter	Xiaomi	MDY-08-EH	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Uncertainty	Note
Radio frequency	8 ppm	(1)
RF power conducted	1.1dB	(1)
RF power radiated	3.86dB	(1)
Spurious emissions, conducted	3.6dB	(1)
Radiated Spurious Emissions	30-200MHz ±4.52dB	(1)
	0.2-1GHz ±5.56dB	(1)
	1-6GHz ±3.84dB	(1)
	6-18GHz ±3.92dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor ofk=1.96.

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Spectrum Analyzer	Agilent	N9020A	US47140102	2024-03-19	2025-03-18
Signal Generator	Agilent	83752A	3610A01453	2024-02-24	2025-02-23
Vector Signal Generator	Agilent	N5182A	MY47070202	2024-02-24	2025-02-23
Power Sensor	Agilent	U2021XA	MY55160007	2024-02-24	2025-02-23
Power Sensor	Agilent	U2021XA	MY54240001	2024-02-24	2025-02-23
Simultaneous Sampling	Agilent	U2531A	TW54243509	2024-02-24	2025-02-23
Temperature&Humidity Chamber	/	HTC-1	/	2024-02-24	2025-02-23
Universal Radio Communication Tester	Rohde & Schwarz	CMW500	148650	2024-02-24	2025-02-23
Attenuator	Pasternack	PE4007-4	/	2024-02-24	2025-02-23
Coaxial Cable	/	0M4RFC	/	2024-07-03	2025-01-03
				2025-01-03	2025-07-02
☐Chamber A: Below 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2024-02-24	2025-02-23
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2024-03-19	2025-03-18
Amplifier	HP	8447F	2805A03475	2024-02-24	2025-02-23
Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2025-02-25
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2024-02-24	2025-02-23
Coaxial Cable	/	RC_6G-N-M	/	2024-03-15	2025-03-14
Coaxial Cable	/	RC_6G-N-M	/	2024-03-15	2025-03-14
Coaxial Cable	/	RC_6G-N-M	/	2024-03-15	2025-03-14
☐Chamber A: Above 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2024-02-24	2025-02-23
Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2024-02-27	2025-02-26
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2024-03-19	2025-03-18
Amplifier	C&D	PAP-1G18	2002	2024-02-27	2025-02-26
Horn Antenna	ETS	3117	00086197	2024-02-26	2025-02-25
DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2025-03-16
Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2024-02-29	2025-02-28
Coaxial Cable	/	C16-07-07	/	2024-03-15	2025-03-14
Coaxial Cable	/	C16-07-07	/	2024-03-15	2025-03-14
Coaxial Cable	/	C16-07-07	/	2024-03-15	2025-03-14
☐Chamber B:Below 1GHz					
Trilog Broadband	Schwarz beck	VULB9163(B)	9163-635	2024-03-17	2027-03-16

Antenna					
Amplifier	Agilent	8447D	2944A10457	2024-02-24	2025-02-23
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2024-02-24	2025-02-23
Coaxial Cable	/	1.5MRFC-LWB3	/	2024-07-03	2025-07-02
Coaxial Cable	/	RG 316	/	2024-07-03	2025-07-02
Coaxial Cable	/	RG 316	/	2024-07-03	2025-07-02
☒Chamber C:Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2024-02-27	2025-02-26
Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2024-04-18	2027-04-17
Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2025-02-25
Amplifier	HP	8447F	2944A03869	2024-02-24	2025-02-23
Coaxial Cable	/	RC_6G-N-M	/	2024-07-03	2025-07-02
Coaxial Cable	/	RC_6G-N-M	/	2024-07-03	2025-07-02
Coaxial Cable	/	RC_6G-N-M	/	2024-07-03	2025-07-02
☒Chamber C: Above 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2024-02-27	2025-02-26
Horn Antenna	POAM	RTF-118A	1820	2023-03-10	2026-03-09
Amplifier	Tonscend	TAP01018050	AP22E806235	2024-02-27	2025-02-26
DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2025-03-16
Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2024-02-29	2025-02-28
Coaxial Cable	/	RC-18G-N-M	/	2024-07-03	2025-07-02
Coaxial Cable	/	RC-18G-N-M	/	2024-07-03	2025-07-02
Coaxial Cable	/	RC-18G-N-M	/	2024-07-03	2025-07-02

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission A)*	Farad	EZ-EMC	RA-03A1 (1.1.4.2)
EMI Test Software (Radiated Emission B)*	Farad	EZ-EMC	RA-03A1 (1.1.4.2)
EMI Test Software (Radiated Emission C)*	Farad	EZ-EMC	RA-03A1-2 (1.1.4.2)

*Remark: indicates software version used in the compliance certification testing.

2. SUMMARY OF TEST RESULTS

Standards	Reference	Description of Test Item	Result
ETSI EN 301 893	4.2.1	Carrier frequencies	Passed
	4.2.2	Nominal Channel Bandwidth, Occupied Channel Bandwidth	Passed
	4.2.3	RF output power,	Passed
	4.2.3	Power Density	Passed
	4.2.4.1	Transmitter unwanted emissions outside the 5 GHz RLAN bands	Passed
	4.2.4.2	Transmitter unwanted emissions within the 5 GHz RLAN bands	Passed
	4.2.5	Receiver spurious emissions	Passed
	4.2.7	Adaptivity	Passed
	4.2.8	Receiver Blocking	Passed
	4.2.9	User Access Restrictions	Passed
	4.2.10	Geo-location capability	N/A
Passed: The EUT complies with the essential requirements in the standard. Failed: The EUT does not comply with the essential requirements in the standard. N/A: not applicable. *:The equipment doesn't allow the user to change the country of operation and/or the operating frequency band if that results in the equipment no longer being compliant with the DFS requirements.			

3. CARRIER FREQUENCYS

3.1Standard Applicable

According to Section 4.2.1, the actual centre frequency for any given channel declared by the manufacturer shall be maintained within the range fc ± 20 ppm.

3.2Test Procedure

The device under test has an integral antenna and the power was measured on a radiated basis. According to the EN301 893 Section 5.4.2.

3.3Summary of Test Results

Please refer to Appendix A

4. NOMINAL CHANNEL BANDWIDTH AND OCCUPIED CHANNEL

4.1 Standard Application

According to Section 4.2.2, the Nominal Channel Bandwidth shall be at least 5 MHz at all times.
The Occupied Channel Bandwidth shall be between 80 % and 100 % of the declared Nominal Channel Bandwidth. In case of smart antenna systems (devices with multiple transmit chains) each of the transmit chains shall meet this requirement.

4.2 Test Procedure

The measurement procedure shall be as follows:

Step 1:
Connect the UUT to the spectrum analyser and use the following settings:
Centre Frequency: The centre frequency of the channel under test.
Resolution BW: 100kHz
Video BW: 300kHz
Frequency Span: 2 × Nominal Bandwidth (e.g. 40MHz for a 20MHz channel).
Detector Mode: Peak
Trace Mode: Max Hold

Step 2:
When the trace is complete, capture the trace, for example using the "View" option on the spectrum analyser. Find the peak value of the trace and place the analyser marker on this peak.
Step 3:
Use the 99 % bandwidth function of the spectrum analyser to measure the Occupied Channel Bandwidth of the UUT. This value shall be recorded.
The measurement described in steps 1 to 3 above shall be repeated in case of simultaneous transmissions in non-adjacent channels.

4.3 Summary of Test Results/Plots

Please refer to Appendix D

5. RF OUTPUT POWER AND POWER DENSITY

5.1Standard Applicable

According to Section 4.2.3,the limits below are applicable to the system as a whole and in any possible configuration. This includes smart antenna systems (devices with multiple transmit chains).

In case of multiple (adjacent or non-adjacent) channels within the same sub-band, the total RF output power of all channels in that sub-band shall not exceed the limits defined below.

In case of multiple, non-adjacent channels operating in separate sub-bands, the total RF output power in each of the sub-bands shall not exceed the limits defined below.

Table 2: Mean e.i.r.p. limits for RF output power and Power Density at the highest power level (PH)

Frequency range (MHz)	Mean e.i.r.p. limit for P_H(dBm)		Mean e.i.r.p. density limit(dBm/MHz)	
	with TPC	without TPC	with TPC	without TPC
5150 to 5350	23	20/23 (see note 1)	10	7/10 (see note 2)
5470 to 5725	30 (see note 3)	27 (see note 3)	17 (see note 3)	14 (see note 3)

NOTE 1: The applicable limit is 20dBm, except for transmissions whose nominal bandwidth falls completely within the band 5150MHz to 5250MHz, in which case the applicable limit is 23dBm.

NOTE 2: The applicable limit is 7dBm/MHz, except for transmissions whose nominal bandwidth falls completely within the band 5150MHz to 5250MHz, in which case the applicable limit is 10dBm/MHz.

NOTE 3: Slave devices without a Radar Interference Detection function shall comply with the limits for the frequency range 5250MHz to 5350MHz.

Table 3: Mean e.i.r.p. limits for RF Output Power at the lowest power level of the TPC range

Frequency range	Mean e.i.r.p. (dBm) limit for P_L
5250 MHz to 5350 MHz	17
5470 MHz to 5725 MHz	24 (see note)

NOTE: Slave devices without a Radar Interference Detection function shall comply with the limits for the band 5 250 MHz to 5 350 MHz.

5.2Test Procedure

Please refer to ETSI EN 301 893Sub-clause 5.4.4.2.1 for the measurement method.

5.3Summary of Test Results

RF OUTPUT POWER Please refer to Appendix B
POWER DENSITY Please refer to Appendix C

6. TRANSMITTER UNWANTED EMISSIONS

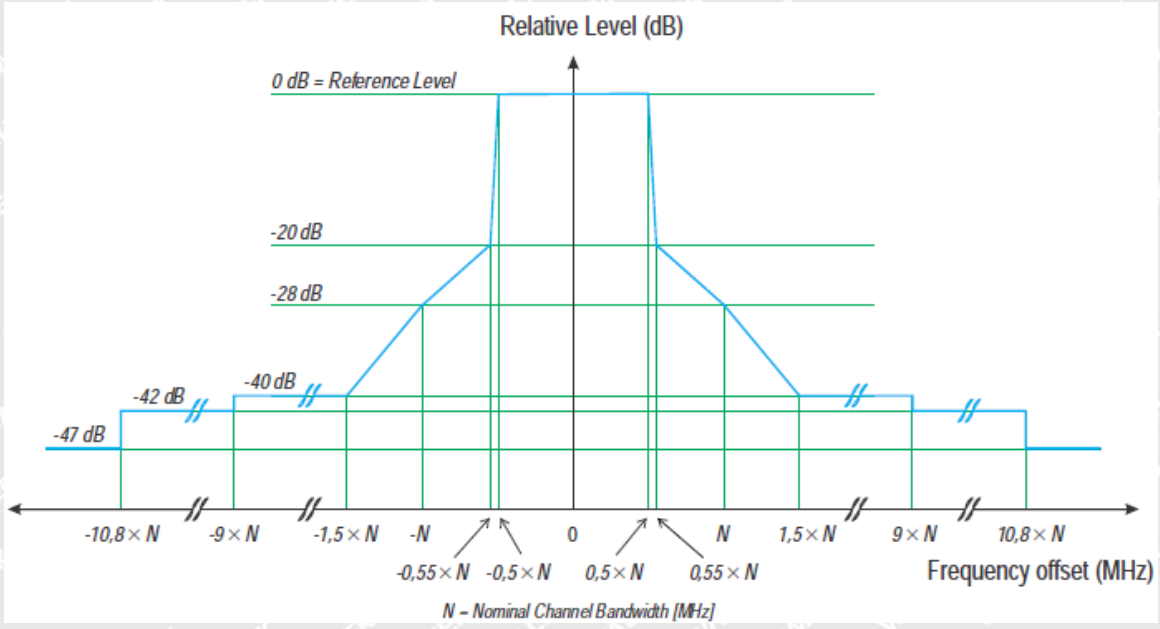
6.1Standard Applicable

According to EN 301 893 Section 4.2.4, the level of unwanted emission shall not exceed the limits given in table

Table 4: Transmitter unwanted emission limits outside the 5GHz RLAN bands

Frequency range	Maximum power	Bandwidth
30MHz to 47MHz	-36dBm	100kHz
47MHz to 74MHz	-54dBm	100kHz
74MHz to 87.5MHz	-36dBm	100kHz
87.5MHz to 118MHz	-54dBm	100kHz
118MHz to 174MHz	-36dBm	100kHz
174MHz to 230MHz	-54dBm	100kHz
230MHz to 470MHz	-36dBm	100kHz
470MHz to 862MHz	-54dBm	100kHz
862MHz to 1GHz	-36dBm	100kHz
1GHz to 5.15GHz	-30dBm	1MHz
5.35GHz to 5.47GHz	-30dBm	1MHz
5.725GHz to 26GHz	-30dBm	1MHz

According to EN 301 893 Section 4.5.2.2, The level of unwanted emission shall not exceed the limits given in table.



6.2Test Procedure

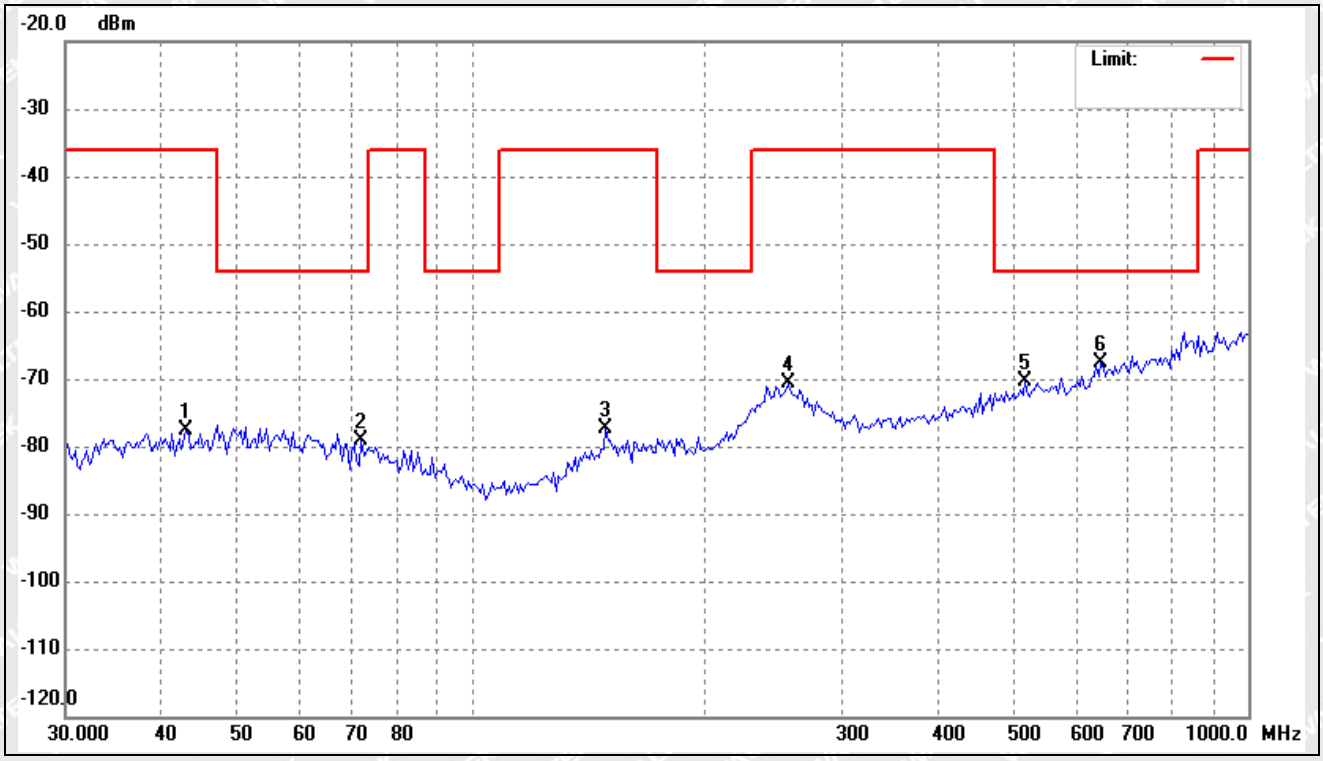
The device under test has an integral antenna and the power was measured on a radiated basis. According to the EN301 893 Section 5.3.5, 5.3.6.

6.3Summary of Test Results/Plots

Note: *this EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

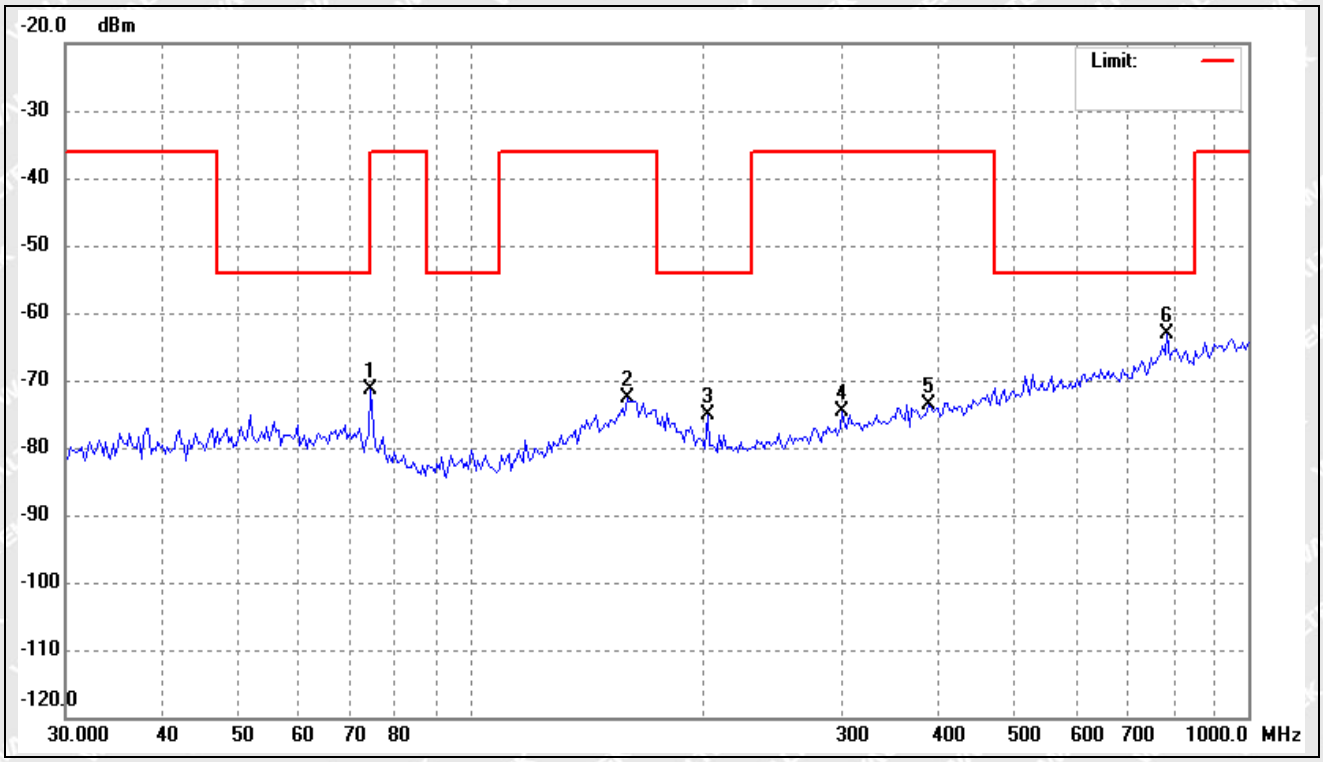
- *Spurious Emission From 30MHz to 1GHz*
- *802.11a (worst case)*

Test Channel:	5180MHz(worst case)	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	42.9305	-80.56	2.83	-77.73	-36.00	-41.73	ERP
2	72.2111	-79.78	0.68	-79.10	-54.00	-25.10	ERP
3	148.9175	-78.20	0.75	-77.45	-36.00	-41.45	ERP
4	255.8226	-78.79	8.07	-70.72	-36.00	-34.72	ERP
5	516.5651	-77.85	7.44	-70.41	-54.00	-16.41	ERP
6	646.8217	-77.24	9.50	-67.74	-54.00	-13.74	ERP

Test Channel:	5180MHz(worst case)	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	74.2696	-73.38	1.94	-71.44	-36.00	-35.44	ERP
2	158.6399	-80.02	7.39	-72.63	-36.00	-36.63	ERP
3	201.4539	-76.42	1.23	-75.19	-54.00	-21.19	ERP
4	300.6988	-77.90	3.32	-74.58	-36.00	-38.58	ERP
5	387.2565	-78.75	5.11	-73.64	-36.00	-37.64	ERP
6	787.4749	-75.34	12.34	-63.00	-54.00	-9.00	ERP

- Spurious Emission Above 1GHz
- 802.11a (worst case)

Frequency	Result	Limit	Margin	Polar
(MHz)	(dBm)	(dBm)	(dB)	H/V
5180MHz				
10360	-38.99	-30	-8.99	H
15540	-38.28	-30	-8.28	H
10360	-36.17	-30	-6.17	V
15540	-35.52	-30	-5.52	V

Note: Testing is carried out with frequency rang 30MHz to 26.5GHz, which above 1GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

- Frequency emissions within the 5 GHz RLAN bands.

Please refer to Appendix E&F

7. RECEIVER SPURIOUS EMISSION

7.1Standard Applicable

According to EN301 893 Section 4.2.5, receiver spurious emissions are emissions at any frequency when the equipment is in received mode.
The spurious emissions of the receiver shall not exceed the values in tables 5.

Table 5: Spurious radiated emission limits

Frequency range	Maximum power	Measurement bandwidth
30MHz to 1GHz	-57dBm	100kHz
1GHz to 26GHz	-47dBm	1MHz

7.2Test Procedure

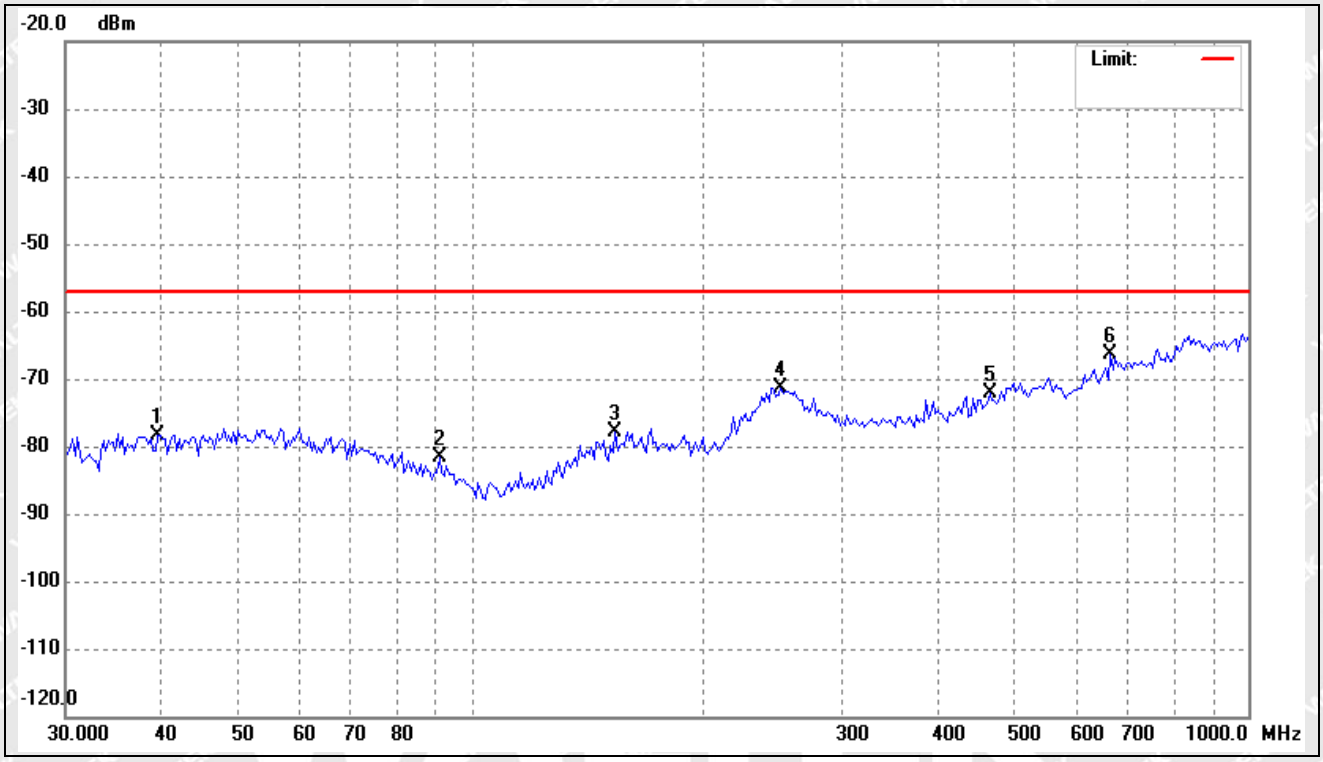
The device under test has an integral antenna and the power was measured on a radiated basis. According to the EN301893 Section 4.2.5.

7.3Summary of Test Results/Plots

➢ *Spurious Emission From 30MHz to 1GHz*

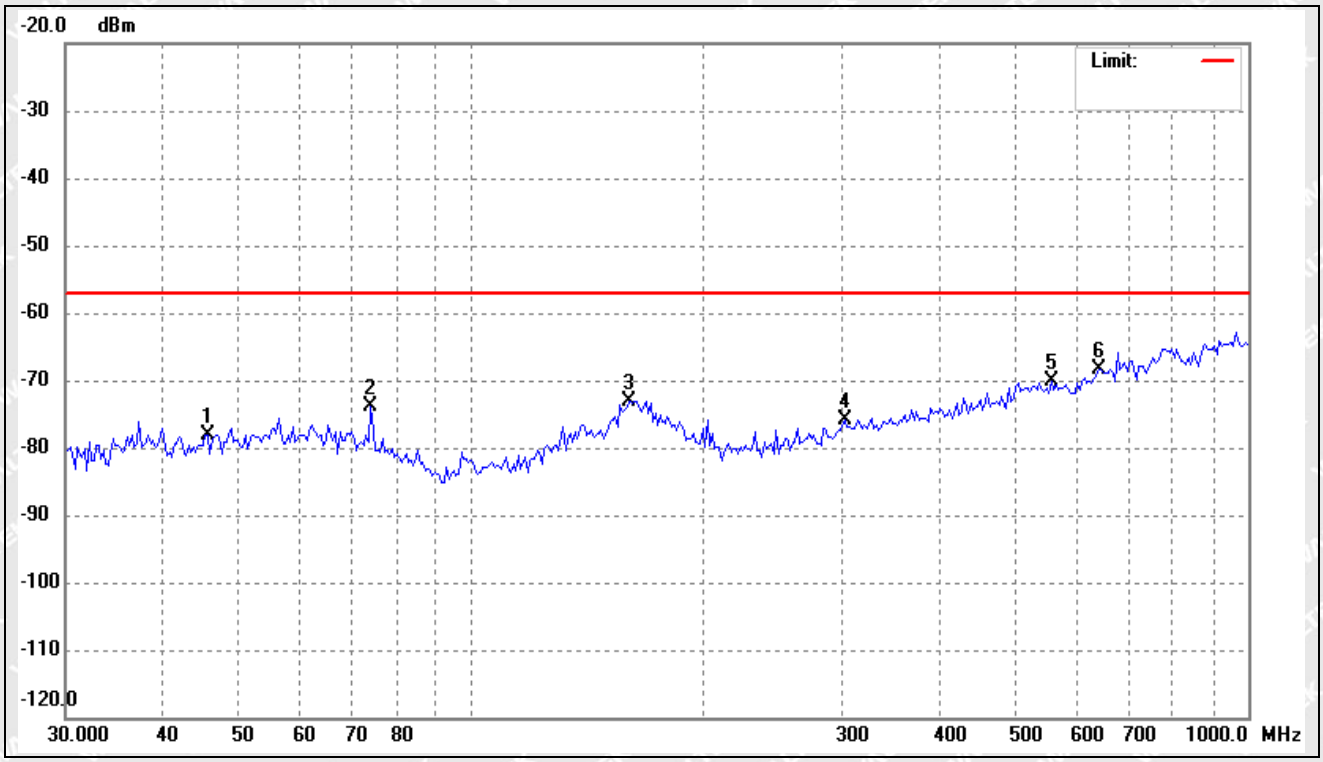
802.11a (worst case)

Test Channel:	5180MHz(worst case)	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	39.4588	-80.79	2.50	-78.29	-57.00	-21.29	ERP
2	91.0574	-79.08	-2.65	-81.73	-57.00	-24.73	ERP
3	153.1627	-78.89	0.91	-77.98	-57.00	-20.98	ERP
4	250.4859	-79.91	8.51	-71.40	-57.00	-14.40	ERP
5	464.8867	-78.56	6.36	-72.20	-57.00	-15.20	ERP
6	665.2610	-76.41	10.02	-66.39	-57.00	-9.39	ERP

Test Channel:	5180MHz(worst case)	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	45.7333	-81.11	3.09	-78.02	-57.00	-21.02	ERP
2	74.2696	-75.75	1.94	-73.81	-57.00	-16.81	ERP
3	159.7586	-80.98	7.83	-73.15	-57.00	-16.15	ERP
4	302.8193	-79.13	3.37	-75.76	-57.00	-18.76	ERP
5	558.0788	-78.31	8.13	-70.18	-57.00	-13.18	ERP
6	642.2923	-77.62	9.36	-68.26	-57.00	-11.26	ERP

➢ Spurious Emission Above 1GHz

Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
5180MHz				
4257.79	-58.53	-47	-11.53	H
9724.36	-51.52	-47	-4.52	H
4769.25	-59.53	-47	-12.53	V
9861.34	-51.35	-47	-4.35	V

Note: Testing is carried out with frequency rang 30MHz to 26.5GHz, which above 1GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Receiver spurious emissions Please refer to Appendix G

8.Adaptivity

8.1 Standard Application

See clause 4.2.7 for the test conditions. These measurements shall only be performed at normal test conditions.

The channels and the channel bandwidths to be used for testing are defined in clause 4.2.7. The device shall be configured to operate at its maximum output power level.

The different steps below define the procedure to verify the efficiency of the adaptivity mechanism of the equipment.

Step 1:

• The UUT shall connect to a companion device during the test. The signal generator, spectrum analyser, UUT and the companion device are connected using a Set-up equivalent to the example given by figure 13 although the signal generator does not generate any signals at this point in time. The spectrum analyser is used to monitor the transmissions of the UUT in response to the interference signal.

• The received signal level (wanted signal from the companion device) at the UUT shall be sufficient to maintain a reliable link for the duration of the test. A typical value for the received signal level which can be used in most cases is -50 dBm/MHz.

• The analyser shall be set as follows:

- RBW: ≥ Occupied Channel Bandwidth (if the analyser does not support this setting, the highest available setting shall be used)
- VBW: 3 × RBW (if the analyser does not support this setting, the highest available setting shall be used)
- Detector Mode: RMS
- Centre Frequency: Equal to the centre frequency of the operating channel
- Span: 0Hz
- Sweep time: > Channel Occupancy Time
- Trace Mode: Clear/Write
- Trigger Mode: Video or External

Step 2:

• Configure the UUT for normal transmissions with a payload resulting in a minimum transmitter activity ratio of 30 %. Where this is not possible, the UUT shall be configured to the maximum payload possible.

• Using the procedure defined in clause 4.2.9.2.2, it shall be verified that the UUT complies with the maximum Channel Occupancy Time and the (minimum) Idle Period defined in clause 4.8.3.1 for Frame Based Equipment and defined in clause 4.8.3.2 for Load Based Equipment.

NOTE 1: For IEEE 802.11™ [8] and IEEE 802.11ac™ [9] equipment (see first paragraph of clause 4.8.3.2), the limits to be applied for the (minimum) Idle Period and the maximum Channel Occupancy Time are as defined for other types of Load Based Equipment (see clause 4.8.3.2, Option A point 2) and point 3) or Option B point 2) and point 3).

Step 3: Adding the interference signal.

• An interference signal as defined in clause B.7 is injected on the current operating channel of the UUT. The power spectral density level (at the input of the UUT) of this interference signal shall be equal to the applicable CCA threshold level (TL) defined in clause 4.8.3.1 or clause 4.8.3.2.

Step 4: Verification of reaction to the interference signal.

• The spectrum analyser shall be used to monitor the transmissions of the UUT on the selected operating channel after the interference signal was injected. This may require the spectrum analyser sweep to be triggered by the start of the interfering signal.

• Using the procedure defined in clause 5.3.9.2.2, it shall be verified that:

i) The UUT stops transmissions on the current operating channel.

NOTE 2: The UUT is assumed to stop transmissions within a period equal to the Maximum Channel Occupancy Time defined in clause 4.8.3.1 for Frame Based Equipment or clause 4.8.3.2 for Load Based Equipment. The UUT is allowed to have Short Control Signalling Transmissions on the current operating channel, see

ii) and iii).

NOTE 3: For equipment having simultaneous transmissions on multiple (adjacent or non-adjacent) operating channels, the equipment is allowed to continue transmissions on other Operating Channels.

ii) Apart from Short Control Signalling Transmissions there shall be no subsequent transmissions while the interfering signal is present.

iii) The Short Control Signalling Transmissions shall comply with the limits defined in clause 4.8.3.3.

The verification of the Short Control Signalling transmissions may require the analyser settings to be changed (e.g. sweep time).

• To verify that the UUT is not resuming normal transmissions as long as the interference signal is present, the monitoring time may need to be 60 s or more, in which case a segmented measurement may need to be performed in order to achieve the required resolution.

• Once the test is completed and the interference signal is removed, the UUT may start transmissions again on this channel however this is not a requirement and therefore does not require testing.

Step 5:

• Step 2 to step 4 shall be repeated for each of the channels to be tested.

8.2 Test procedure

Figure 14 shows an example of the test set-up.

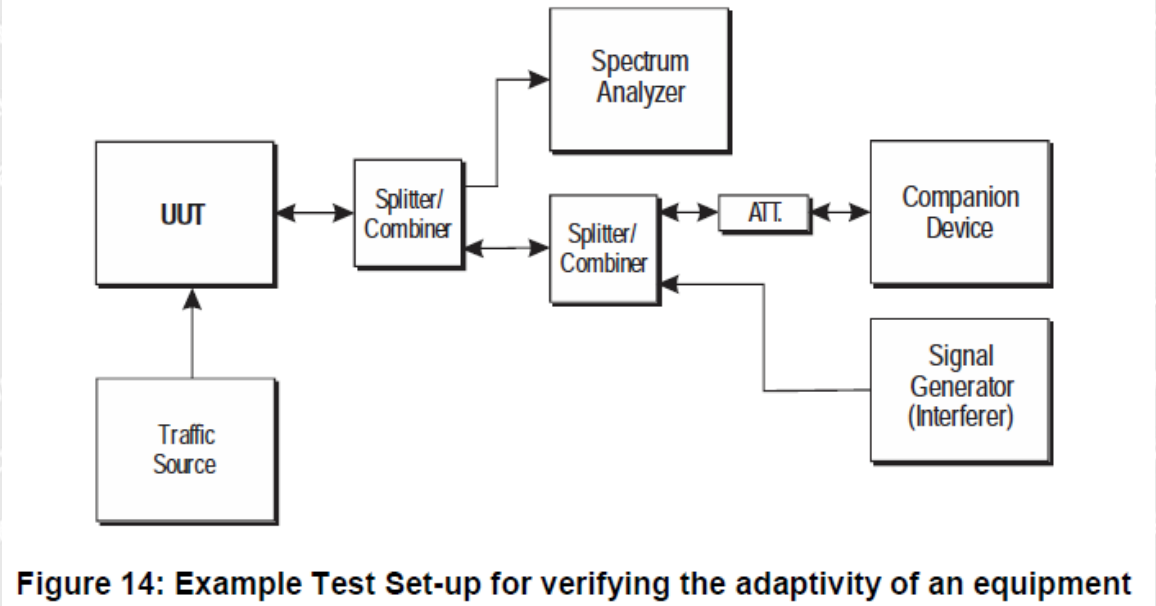


Figure 14: Example Test Set-up for verifying the adaptivity of an equipment

All test procedure is carried to the section 5.3.9.2.2

Step 1:

• The analyser shall be set as follows:

- Centre Frequency: equal to the centre frequency of the channel being investigated
- Frequency Span: 0 Hz
- RBW: approximately 50 % of the Occupied Channel Bandwidth (if the analyser does not support this setting, the highest available setting shall be used)
- VBW: ≥ RBW (if the analyser does not support this setting, the highest available setting shall be used)
- Detector Mode: RMS
- Sweep time: > the Channel Occupancy Time
- Sweep points: at least one sweep point per µs
- Trace mode: Clear/Write
- Trigger: Video or External

Step 2:

• Save the trace data to a file for further analysis by a computing device using an appropriate software application or program.

Step 3:

• Identify the data points related to the channel being investigated by applying a threshold.

• Count the number of consecutive data points identified as resulting from a single transmission on the channel being investigated and multiply this number by the time difference between two consecutive data points.

Repeat this for all the transmissions within the measurement window.

• For measuring idle or silent periods, count the number of consecutive data points identified as resulting from a single transmitter off period on the channel being investigated and multiply this number by the time difference between two consecutive data points. Repeat this for all the transmitter off periods within the measurement window.

8.3 Summary of Test Results/Plots

Please refer to Appendix H

9.Receiver Blocking

9.1 Standard Application

According to section 4.2.8, receiver blocking is a measure of the ability of the equipment to receive a wanted signal on its operating channel without exceeding a given degradation in the presence of an unwanted signal (blocking signal) at frequencies other than those of the operating band.

Load Based Equipment not using any of the mechanisms referenced above shall comply with the following minimum set of requirements :

The minimum performance criterion shall be a PER of less than or equal to 10 %. The manufacturer may declare alternative performance criteria as long as that is appropriate for the intended use of the equipment (see clause 5.4.1, item t).

While maintaining the minimum performance criteria as defined in clause 4.2.8.3, the blocking levels at specified frequency offsets shall be equal to or greater than the limits defined in table 9.

Table 9: Receiver Blocking parameters

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)		Type of blocking signal
		Master or Slave with radar detection (see table D.2, note 2)	Slave without radar detection (see table D.2, note 2)	
Pmin + 6 dB	5 100	-53	-59	Continuous Wave
Pmin + 6 dB	4 900 5 000 5 975	-47	-53	Continuous Wave
NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined clause 4.2.8.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the same levels should be used at the antenna connector irrespective of antenna gain.				

9.2Test Procedure

Step 1: • For non-frequency hopping equipment, the UUT shall be set to the lowest operating channel.
Step 2: • The blocking signal generator is set to the first frequency as defined in the appropriate table corresponding to the receiver category and type of equipment.
Step 3: • With the blocking signal generator switched off, a communication link is established between the UUT and the associated companion device using the test setup shown in figure 6. The variable attenuator is set to a value that achieves the minimum performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 with a resolution of at least 1 dB. The resulting level for the wanted signal at the input of the UUT is Pmin. This value shall be measured and recorded in the test report.
• The signal level is increased by the value provided in the table corresponding to the receiver category and type of equipment.
Step 4: • The blocking signal at the UUT is set to the level provided in the table corresponding to the receiver category and type of equipment. It shall be verified and recorded in the test report that the performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 is met.
Step 5: • Repeat step 4 for each remaining combination of frequency and level for the blocking signal as provided in the table corresponding to the receiver category and type of equipment.
Step 6: • For non-frequency hopping equipment, repeat step 2 to step 5 with the UUT operating at the highest operating channel.

9.3 Test procedure

According to the section 5.4.10.2.1, the test block diagram shall be used.

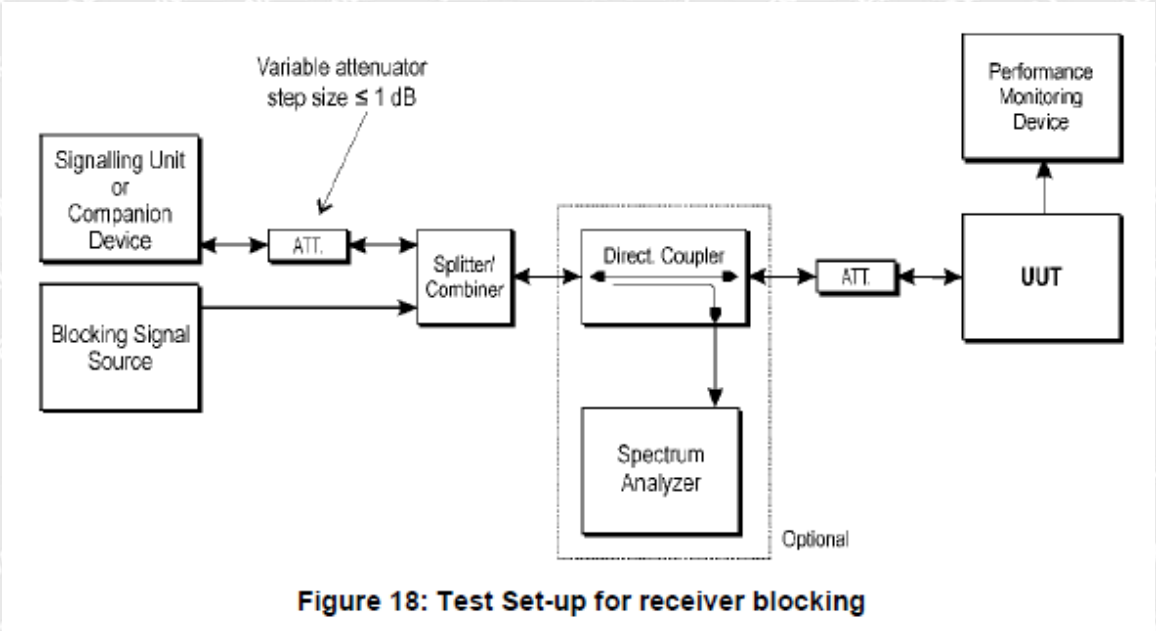


Figure 18: Test Set-up for receiver blocking

All test procedure is carried to the section 5.4.10.2.1
RBW/VBW=8MHz/30MHz

9.4 Summary of Test Results/Plots

The product is slave without radar detection

802.11a Lowest Channel (one channel 5180MHz from 5150-5350MHz)	
Minimum Performance Criteria (@10% PER) (dBm)	-79.81
P_{min}+6dB(dBm)	-73.81
①Blocking Signal Frequency(MHz)	5100
①Block Signal Level (dBm)	-59.00
②Blocking Signal Frequency(MHz)	4900, 5000, 5975
②Block Signal Level (dBm)	-53.00
Test Result(PER):	3.24%

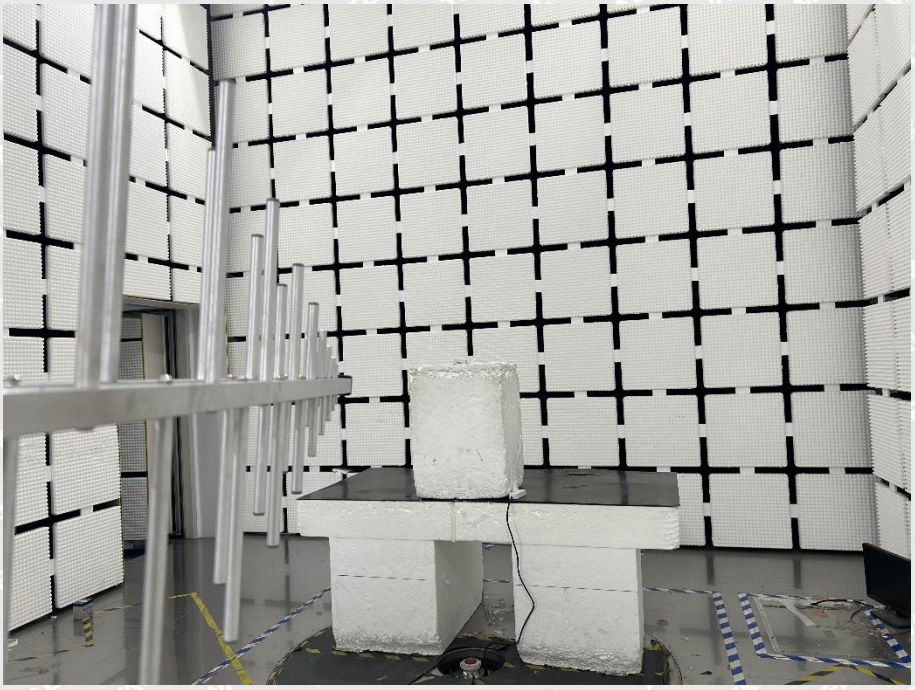
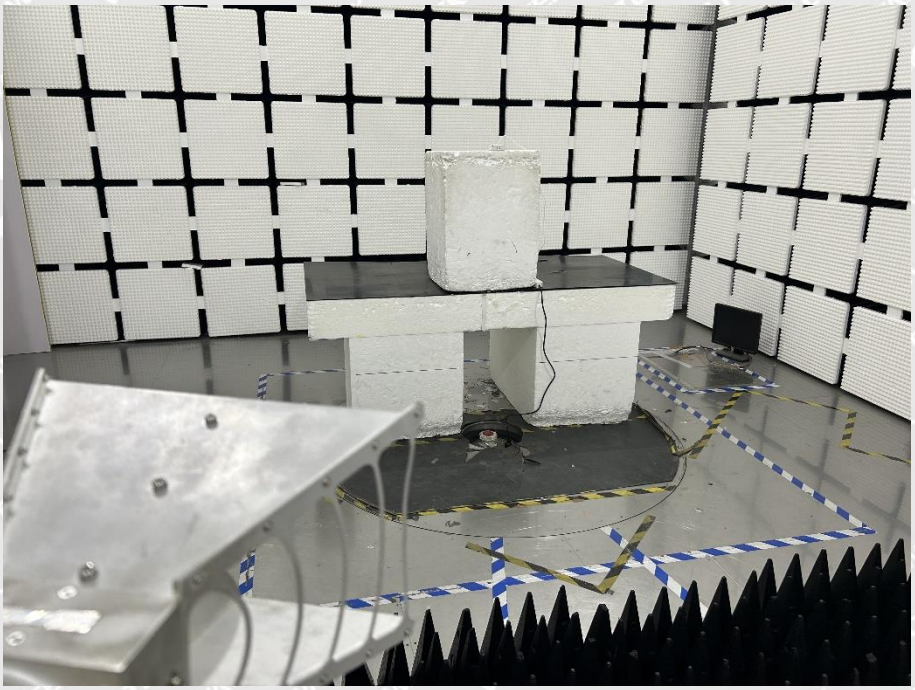
**communication link is established between the UUT and the associated companion device using the test setup shown in figure 6. While the Companion device (CMW500) adjust to a level which can obtain the minimum performance criteria PER 10%,This level define to Pmin*

Remark: the smallest channel bandwidth shall be used together with the lowest data rate for this channel bandwidth. This mode of operation are aligned with the performance criteria defined in clause 4.3.1.12.3 or clause 4.3.2.11.3 as declared by the manufacturer (see clause 5.4.1.t).

EXHIBIT 1 - EUT PHOTOGRAPHS

Please refer to “ANNEX”.

EXHIBIT 2 - TEST SETUP PHOTOGRAPHS

Spurious Emission Test Setup (Below 1GHz)	
Spurious Emission Test Setup (Above 1GHz)	

*******END OF REPORT*******